Response Action Contract
for Remedial, Enforcement Oversight, and Non-Time
Critical Removal Activities at Sites of Release or
Threatened Release of Hazardous Substances
in EPA Region VIII

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Technical Memorandum
Identifying Indoor-only Remediation Properties
For the 2002-03 Winter Construction Season
Part II

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Section 1
Introduction

The first version of this technical memorandum (Part I) was written with the sole intention to present a strategy to identify a group of properties that could be remediated during the 2002/2003 winter construction season. While that memo was intentionally silent on the analytical approach, this second memo (Part II) serves to clarify the analytical steps. Multiple analytical methods may be applied to confirm presence or absence of asbestos in soils, particularly those methods reporting asbestos levels at or below 1% by polarized light microscopy (PLM) (NIOSH 9002). While not a goal, a valuable side benefit of a multi-method approach is that field sample data generated under this memo can be appended to data obtained from the Interim Soil Test Material (ISTM) studies (Syracuse Research Corporation [SRC] Technical Memorandums 2002a). The intent of this memo is to present the changes and additions to the strategy presented in Part I to meet both goals.

Section 2
Strategy Changes

Two key changes or refinements have been made to the original strategy in order to confirm asbestos levels through multi-method analyses. Those are:

- The two-step approach
- The analytical approach

Section 2.1 Two Step Approach

In the original strategy, information collected from both the Phase 1 investigation and Contaminant Screening Study (CSS) would be used to evaluate whether or not a property would be added to the indoor-only remediation list. This evaluation was to be conducted in a two-step process:

1. Evaluate properties that underwent the Phase 1 investigation and have supplemental CSS information.

If additional properties are required after the Phase 1 property evaluation then:

2. Evaluate properties that were only visited during the 2002 CSS investigation.

It is still the intent to use information collected from both Phase 1 and CSS. However, a subset of CSS properties will be evaluated simultaneously with Phase 1 properties versus the original thought that they would only be evaluated if additional properties were required (see below).

Section 2.2 Analytical Approach

The original analytical approach was created strictly to identify properties for an indoor-only clean up list. This approach has been refined to allow for multiple-method analyses of samples to confirm asbestos levels in soils, in particular but not limited to, samples reporting non-detects by PLM. Three categories of properties were identified in the first memo as being candidates for the indoor-only clean-up list. These were:

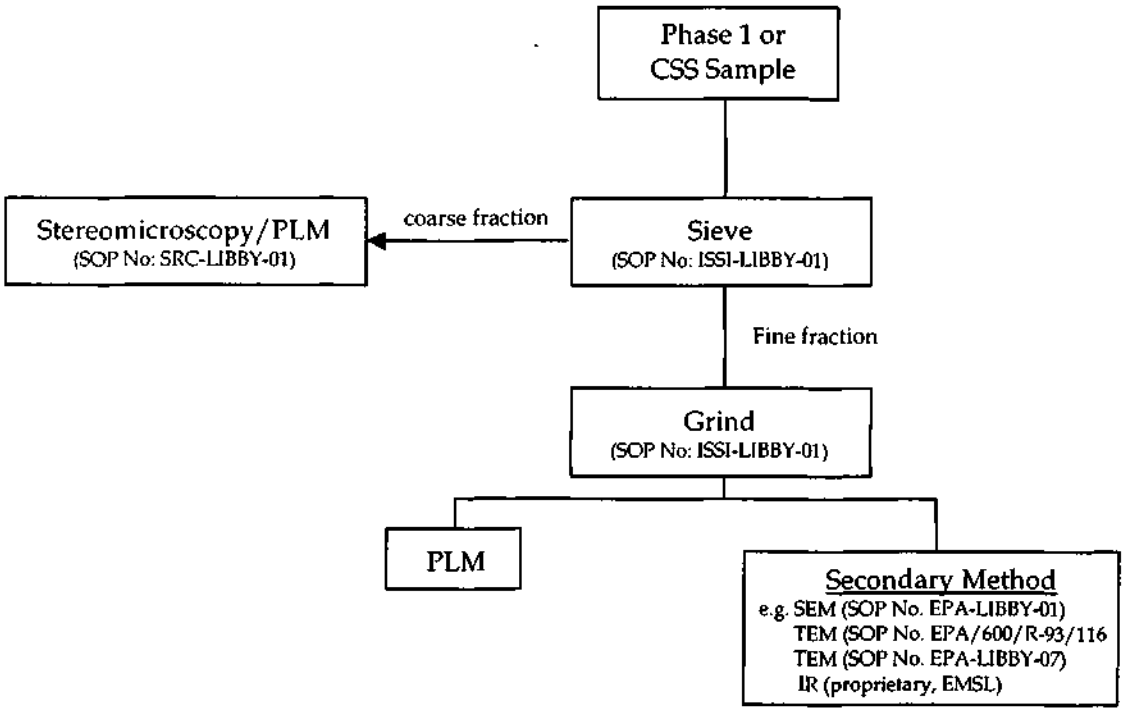
1. Phase 1 properties where all soil sample results were non-detect (ND) by PLM (detection limit = 1%); there was visible confirmation of indoor contamination; and no visible outdoor contamination.

2. Phase 1 properties where no soil samples were collected; there was visible confirmation of indoor contamination; and no visible outdoor contamination.

3. CSS properties where there was visible confirmation of indoor contamination; and no visible outdoor contamination.

The new analytical approach for these properties is shown in Figure 2-1. As seen, each sample will be tested using several analytical methods. Samples will be analyzed immediately by PLM. Data from other methods will arrive as contractual and method refinements are in place.

Figure 2-1: Flow Chart for Analytical Strategy to Identify Indoor-only Properties



CSS - contaminant screening study
IR - infrared reflectance
PLM - polarized light microscopy
SEM - scanning electron microscopy
SOP - standard operating procedure
TEM - transmission electron microscopy

Section 2.2.1 Indoor-Only Evaluations

Two distinct sets of samples are planned for indoor only analysis.

The first set of samples will be obtained from the Phase 1 "All Sample Results ND by PLM" list and carried through preparation and analysis as seen in Figure 2-1. Although Phase 1 samples were prepared in accord with SOP ISSI-LIBBY-01 (Revisions 2 and 3), all samples (i.e., Phase 1 and supplemental CSS) will be prepared according SOP ISSI-LIBBY-01 (Rev. 4) (SRC 2002b). Any material that does not pass through the sieve (coarse) will be analyzed by stereomicroscopy/PLM (SRC-LIBBY-01 [Rev. 0])(SRC 2002c). The material that does pass through the sieve (fine) will be ground to particle size less than 250 microns (μm) and analyzed by PLM, and a series of alternative secondary, methods (to be selected).

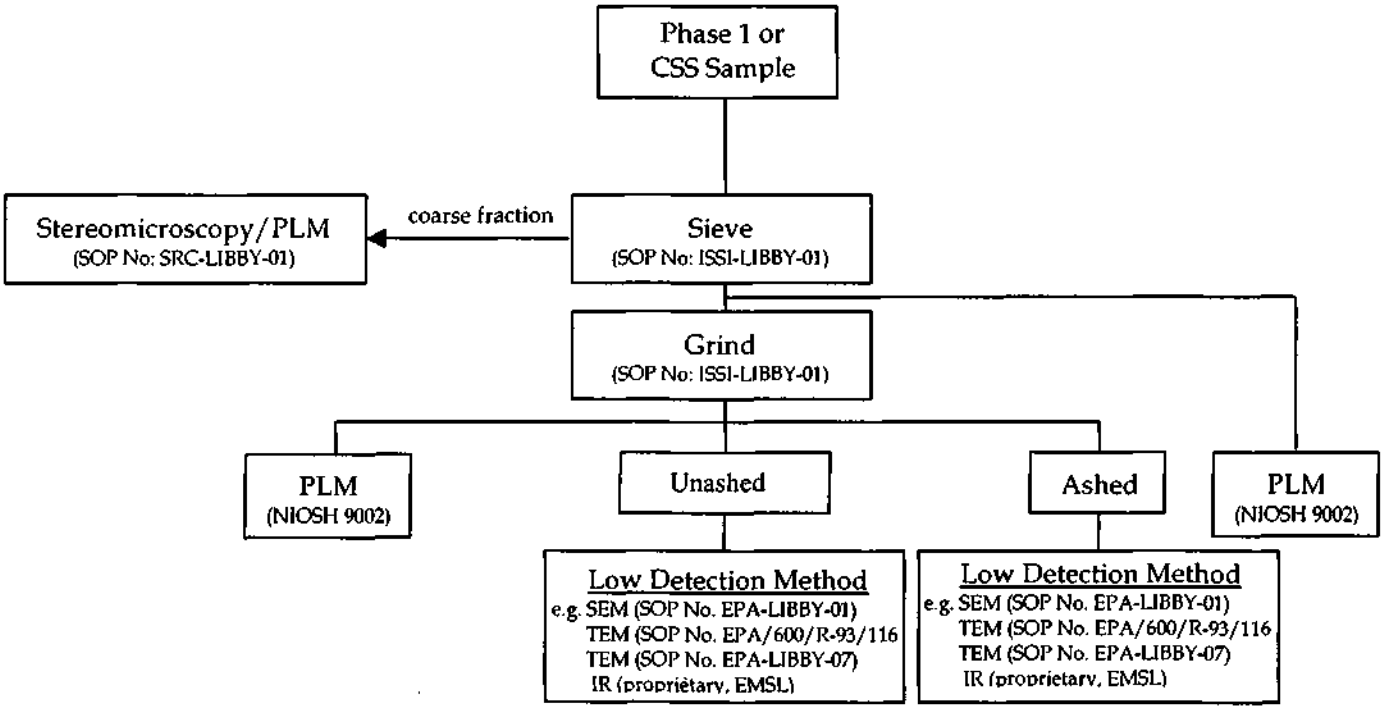
The second set of samples will be selected from the Phase 1 "No Samples Taken" and CSS lists. These samples will be carried through the same preparation described above, but will only be analyzed by PLM at this time.

At this time, the decision to add a property to the indoor-only clean up list will be based solely on PLM results. That is, if all soils samples from a single property are reported as ND by PLM, that property will be added to the indoor-only remediation list. However, the list may be revised as confirmatory data from the alternative, secondary methods are available.

Section 2.2.2 Additional Field Data

In addition to the field data obtained above, a small subset of samples will be tested to evaluate the effect of preparation methods on field samples. The flow diagram is presented in Figure 2-2.

Figure 2-2: Flow Chart for Preparation Method Evaluation



Samples are selected using a stratified-random strategy based upon PLM results for samples prepared in accord with SOP ISSI-LIBBY-01 (Rev. 4) (ground and then analyzed by PLM). An equal number of samples will be selected for each of three concentration bins: greater than or equal to 1% LA, < 1% LA (trace) and ND. Additionally, samples from both the Phase 1 and CSS data collection schemes will be selected for this test. Because PLM results on ground samples will first need to be obtained, this analysis is expected to be performed lag from that described in Section 2.2.2.

Although Phase 1 samples were prepared in accord with SOP ISSI-LIBBY-01 (Revisions 2 and 3), all samples (i.e. Phase 1 and supplemental CSS) will be prepared according SOP ISSI-LIBBY-01 (Rev. 4). Any material that does not pass through the sieve (coarse) will be analyzed by stereomicroscopy/PLM (SRC-LIBBY-01 [Rev. 4]). One portion of the material that passes through the sieve (fine) will be sent without further preparation (i.e., not ground) for PLM analysis. The remainder of the material that does pass through the sieve (fine) will be ground to particle size less than 250 μm and then split. All four splits will be sent for analysis. One will sent for PLM analysis, and three splits for analysis (either ashed or unashed), by low detection methods.

Section 2.3 Quality Assurance/Quality Control (QA/QC)

Table 2-1 lists the QC samples that will be run as part of the analytical approach as well as the frequency of their collection. All QC samples were collected in accordance with either the Phase I SAP (EPA 2000) or CSS SAP (CDM 2002).

Table 2-1: Quality Control Samples

Property Category	Phase 1	CSS
Field Duplicates	1 per 10	1 per 20
Field Blanks	N/A	1 per day
Rinsates	N/A	See note 1
Prep. Duplicates	N/A	1 per 20
Prep. Blanks	N/A	1 per day

N/A - not applicable. These QC samples were not taken during the Phase 1 investigation.

Notes:

1. Aqueous rinsate samples were collected at a rate of 1/day during three independent weeks during the CSS investigation.

Section 3
References

CDM 2002. Libby Asbestos Site, Operable Unit 4 Libby, Montana. Final Sampling and Analysis Plan. Remedial Investigation. Contaminant Screening Study. April

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EPA (TEM) Analysis of Asbestos Fibers in Soil by Tranmission Electron Microscopy EPA-Libby-07. November 16, 2001.

EPA 2000. Sampling and Quality Assurance Project Plan (Revision 1) for Libby, Montana. Environmental Monitoring for Asbestos. Baseline Monitoring for Source Area and Residential Exposure to Tremolite-Actinolite Asbestos Fibers. January.

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SRC 2002a. Interim Soil Test Material (ISTM) studies (Syracuse Research Corporation [SRC] Technical Memorandums 2002

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SRC 2002c. Qualitative Estimation of Asbestos in Coarse Soil by Visual Examination Using Stereomicroscopy and Polarized Light Microscopy. SOP No. SRC-LIBBY-01 (Revision 0). November.

SRC 2002d. Quantification Of Asbestos In Soil By SEM/EDS (SRC-LIBBY-02). October 8.